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**Cc:** [Philip Allen/R6/USEPA/US@EPA](#); [Barry Forsythe/R6/USEPA/US@EPA](#); [Jon Rauscher/R6/USEPA/US@EPA](#); [Jessica White](#); [Bob Piniewski](#); [Danielle Sattman](#); [Linda Broach](#); [Maureen Hatfield](#); [Michael Smith](#); [Richard Seiler](#); [Don Pitts](#)  
**Subject:** Re: Patrick Bayou - Meeting Notes and Materials  
**Date:** 08/10/2009 03:00 PM

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All -

This e-mail discussion is intended to provide feedback on the question concerning the adequacy of the existing sediment toxicity data to support the ecological risk assessment for the Patrick Bayou superfund site. This was the "acute vs. chronic" sediment data/toxicity testing subject identified in Philip Turner's 7/14/09 e-mail.

I asked Dr. Linda Broach of our TCEQ region office to prepare a response on this subject. This e-mail reflects my input but largely is based on her research and expertise. I also coordinated with Joe Bell in preparation of this e-mail.

Toxicity data has been collected from 15 stations within the area represented by the Patrick Bayou Superfund site. Sediment from each station was tested twice for survival of *Leptocheirus plumulosus* and *Neanthes arenaceodentata* in 10-day acute whole sediment toxicity tests. Five of these stations were tested a third time for potential toxicity to *Leptocheirus* (10-day survival), *Ampelisca abdita* (7-day and 10-day survival), *Americamysis bahia* (7-day and 10-day survival) and *Mercenaria mercenaria* (7-day survival and growth).

*Leptocheirus* appeared most sensitive demonstrating significant toxicity in 43% (15 of 35) of the sediment samples from the site. Test results also appeared to correlate well with instances of elevated sediment COC concentrations. Literature provided by the JDG indicates that the 10-day acute test for *Leptocheirus* yields similar results to the 28-day chronic test for this same species. We agree with this assessment. This information also shows that *Leptocheirus* is more sensitive than many other toxicity test organisms, although it is not the most sensitive.

Conversely, the *Neanthes* data yielded results inconsistent with any of the sediment chemistry parameters measured, for the most part. The literature suggests (we can provide articles) that *Neanthes* is a fairly insensitive (acute duration) test organism. *Neanthes* toxicity test data has been shown to correlate with sediment chemistry when growth or reproduction are measured in test of at least 28-day duration. We do not believe that the 10-day *Neanthes* toxicity data will be useful in evaluating risks to benthos in Patrick Bayou.

To evaluate risks to benthos in Patrick Bayou, toxicity test results are needed on multiple species and endpoints. The limited data for the 5 additional samples tested with other species shows that some of the other organisms were sensitive to Patrick Bayou sediments where *Leptocheirus* survival was not significantly affected. We suggest additional chronic toxicity data using another sensitive species. Without this we feel that the existing data is not sensitive enough. Our concern is that the existing data may indicate that fairly elevated concentrations of COCs in Patrick Bayou are not toxic to benthos, whereas this may very well be a question of sensitivity and test duration.

We will (hopefully) follow up this e-mail with some suggested additional toxicity test methods. The JDG is encouraged to make suggestions as well.

Both Linda and I are available for questions. The TCEQ and trustees are prepared to present similar formal comments if the future ecological risk assessment work plan goes forward without consideration of additional sediment toxicity tests. We appreciate the opportunity to discuss this issue before review of the formal work plan.

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>>> <Turner.Philip@epamail.epa.gov> 7/14/2009 11:25 AM >>>

Hi Joe,

Yes, EPA and the Patrick Bayou group (Project Navigator, Anchor, JDG) would like your input. Anchor was in town for another meeting and asked to drop by. They offered a few suggestions towards moving forward the risk assessment workplan. We discussed the topics you see in the attachments and Jessica White's summary, with the understanding that several were not in attendance and that their input was valuable.

As I understood, the JDG needs input on the following:

- 1) the JDG would like comments on the Sediment Zone Mixing Study as soon as possible as it will help speed up the risk assessment workplans and field work scheduled for Sept or Oct.
- 2) Is 10 cm ok for sampling depth for the risk assessments? The JDG proposed that this depth is likely greater than the biological zone of the Bayou.
- 3) Acute vs chronic sediment data/tox testing. Anchor presented rationale for using the acute data as there are numerous papers suggesting these types of tests did not offer much different results and that acute tests were sometimes even more sensitive (based on the endpoint). They forwarded papers cited for our review, and I sent another one out yesterday. I'm not sure if everyone got it, so let me know if you didn't and would like it. The JDG is seeking thoughts on this approach.
- 4) Is it ok if higher trophic level mammals (e.g., mink, otter) are not assessed? The rationale for this was the absence of habitat, however, a habitat suitability has not been performed. It was suggested that they at least assess a small mammal which might serve as prey for raptors. The group tentatively agreed that higher mammals might not be necessary, but others need to weigh in. I've since spoken to TPW and Linda Broach who both agreed that higher level mammals would probably be risked away, BUT the JDG should go ahead and perform those assessments for completeness.
- 5) The JDG proposed that the Human Health risk assessment only needs to cover Occupational dermal exposure. It was suggested and tentatively agreed upon to include incidental ingestion. Your input on this is also appreciated.

The following were FYI:

- 1) The first cut of the risk assessment will focus on traditional deterministic methods, and may include probabilistic approaches as a "second tier" refinement. The understanding was that we will see less probabilistic than originally thought, at least at first, then those methods might be used at a later point for refinement where applicable.
- 2) The JDG will likely expand it's efforts on upstream characterization.

Hope this helps.

Phil

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